

2. Iowa's Transit Context

To understand the context of public transit in Iowa is to understand some of the underlying factors that are impacted by transit such as the population, or to understand how other transportation systems intersect with it such as intermodal nodes where buses and bicycles or other modes meet. This chapter will highlight past and current trends of socio-demographics in Iowa to understand the people that utilize transportation as well as the characteristics of the transportation systems themselves.

2.1. Sociodemographic Characteristics

The Iowa Public Transit Long Range Plan seeks to understand how the State will look in the future, both in the near term and the long term.

How will Iowa be different in 2050?

What key changes will occur that will affect the residents of Iowa?

What key changes will specifically impact passenger transportation and public transit?

It is impossible to predict the future; however, this Plan will try to understand past, current, and projected trends that help gain better insight into what the future may hold. This chapter will examine specific factors that influence public transit, including demographic, economic, and passenger transportation trends that have affected Iowa in the past; how they are affecting Iowa today; and how they are projected to affect Iowa in the future. This chapter will also highlight characteristics of public transit and other passenger transportation options in Iowa. An understanding of the characteristics that make Iowa unique will help project future needs and plan to meet these challenges.

Demographic trends

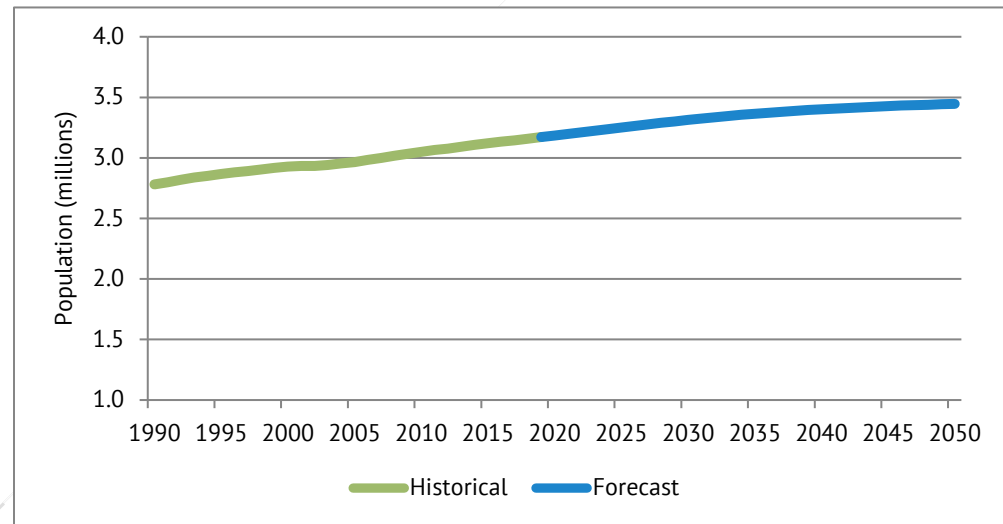
Iowa's population is growing at a slow pace

Iowa's population has remained relatively stable since 1990, growing about 13.6 percent over the past 30 years, compared to the rest of the U.S. which has grown 31.8 percent during the same period. Based on U.S. Census 2017 estimates, Iowa ranked 31st among all states when comparing total population, moving down one spot from 30th since 2015. It is projected that Iowa's population will continue to increase at the same rate over the next three decades, growing from 3.15 million in 2017 to approximately 3.44 million in 2050 (see Figure 2.1).

Iowa's population growth from 2000 to 2010 was slower than the national growth rate but was relatively consistent with the Midwest region, defined by the U.S. Census Bureau as the states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

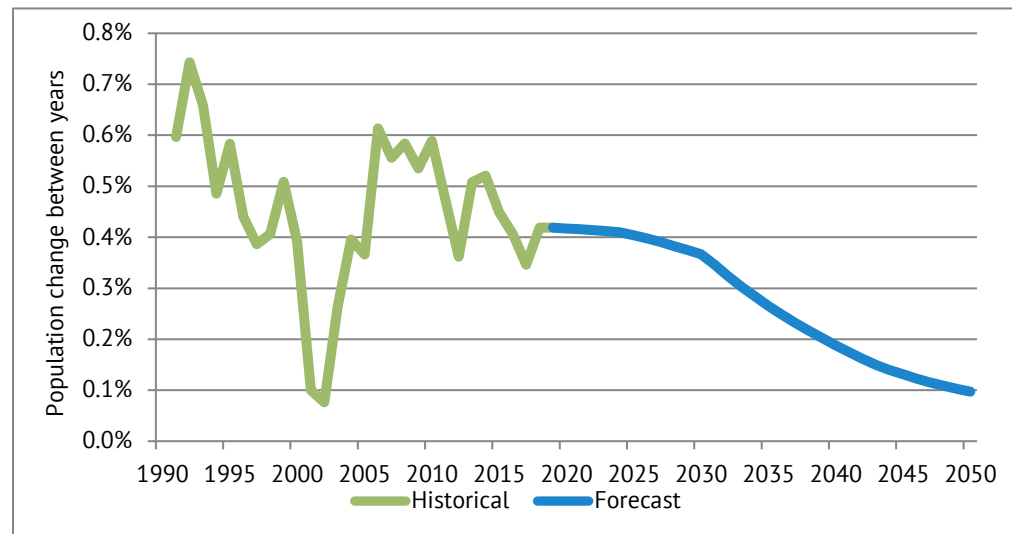
However, Iowa's population is not just slowly growing; the rate of growth is also slowing. Iowa's population growth rate, based on historic census data, is projected to continue to decrease over the next several decades. By 2050, Iowa's growth rate is projected to be less than 0.1 percent. Based on the state's 2050 projected population of 3.44 million, growth of 0.1 percent would result in less than 3,500 additional people per year.

Figure 2.1: Iowa population, 1990-2050



Sources: U.S. Census Bureau, Woods and Poole Economics Inc.

Figure 2.2: Iowa population growth rate, 1990-2050

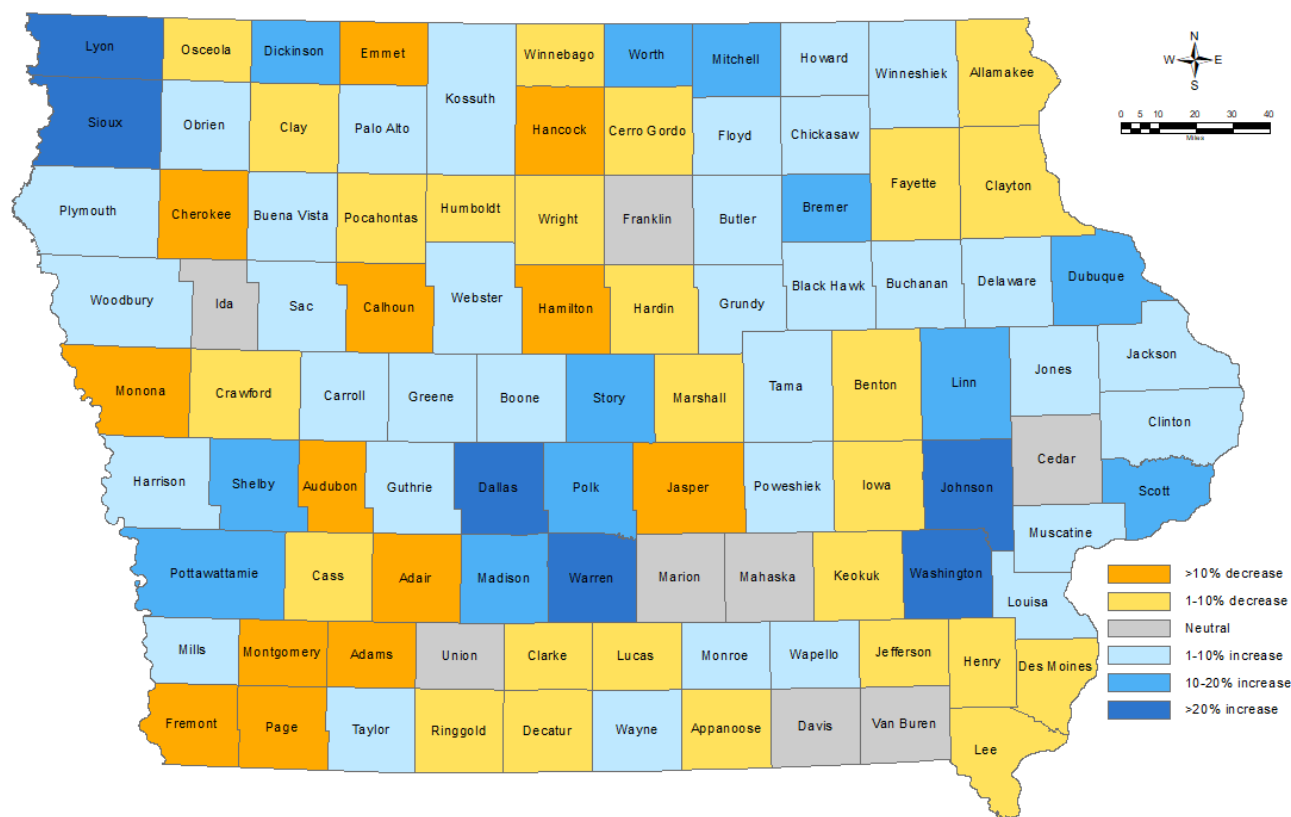


Sources: U.S. Census Bureau, Woods and Poole Economics Inc.

Iowa's population growth is not uniform throughout the state

Areas of population growth and decline vary around the state. Between 2000 and 2018, 29 of Iowa's 99 counties grew by one percent or more, eight counties remained unchanged, and 62 counties declined by one percent or more. While there was growth in various locations across Iowa, most of the population increases took place within or near metropolitan areas. Figure 2.3 illustrates the population change across Iowa's 99 counties.

Figure 2.3: County population change, 2000-2018



Sources: U.S. Census Bureau, Woods and Poole Economics Inc.

Iowa's population is urbanizing

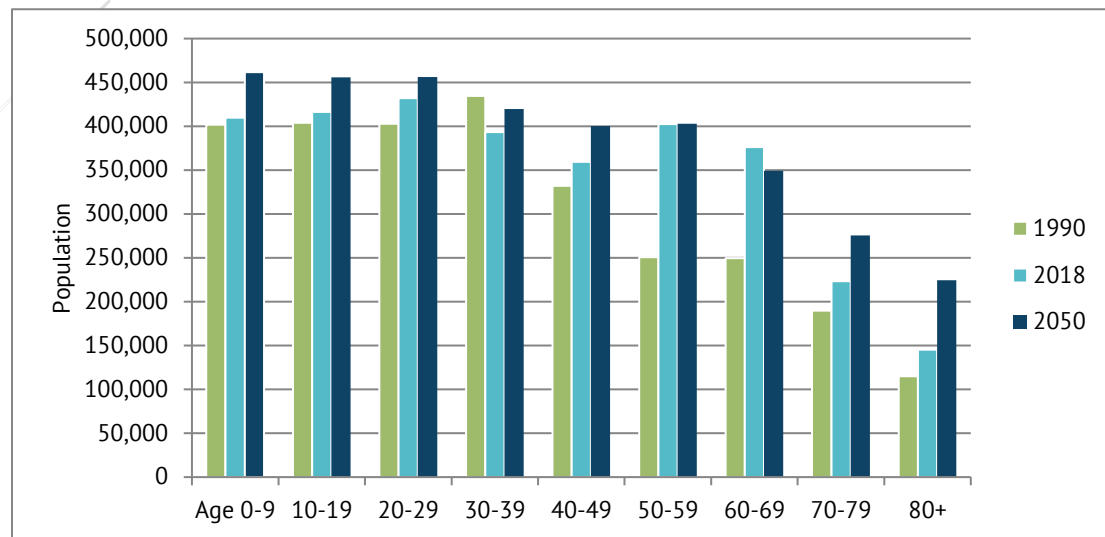
As mentioned previously, Iowa's population is continuing to migrate toward the state's nine metropolitan areas, which each have a total population of at least 50,000 people. Historically, the majority of Iowa's population has resided in nonmetropolitan areas, yet most of the population growth in recent decades has been in counties that contain or are adjacent to metropolitan areas. Although Iowa's population as a whole is growing at a slow pace, the shift in population from rural to urban communities is having noticeable impacts on the public transportation system. Increased population in metropolitan areas can create urban congestion and capacity issues, with suburban growth challenging fixed route transit services. Rural jurisdictions with decreasing population will be facing increased challenges with longer school bus routes to pick up students, longer commutes to work for employees, and a smaller tax base to fund transportation options.

Iowa's population is undergoing generational shifts

Iowa's median age has increased from 30 years old in 1980 to 38.2 years old in 2018, and 17.1 percent of Iowa's population is older than 65 – now the fifth-highest percent in the United States. This number is expected to continue to grow as more of the “Baby Boomer” generation reaches this milestone in the coming years. At the same time, almost 40 percent of the population forecasted to live in Iowa in 2050 will be less than 30 years old – in other words, this segment of the population has not yet been born. Figure 2.4 shows Iowa's estimated population by age for 1990, 2018, and 2050.

According to the U.S. Census Bureau¹, Millennials (those born between 1982 and 2000) outnumber Baby Boomers and are far more diverse than any previous generation.

Figure 2.4: Historical and forecasted population by age for Iowa



Source: Woods and Poole Economics Inc.

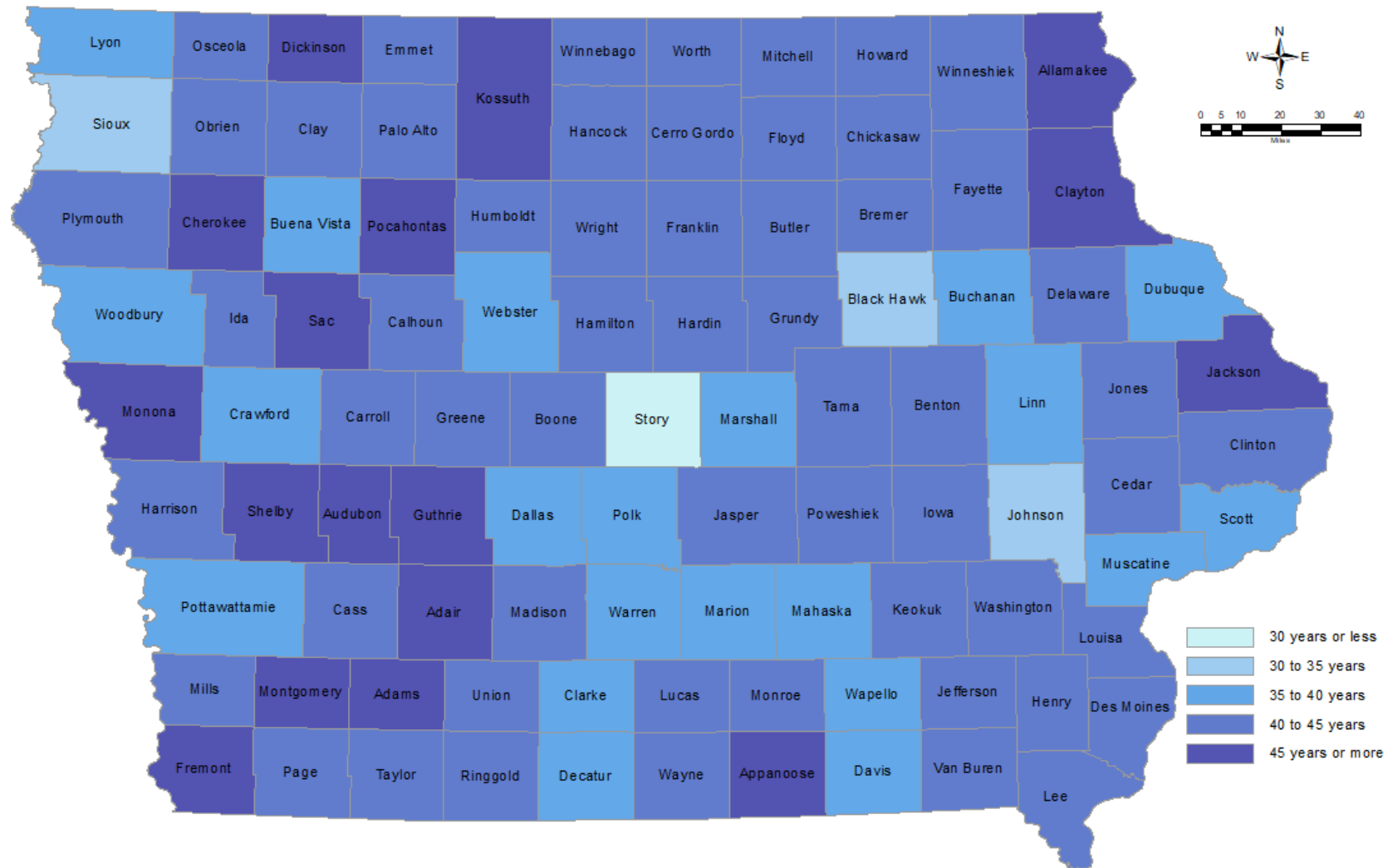
¹ U.S. Census Bureau Press Release: <https://www.census.gov/newsroom/press-releases/2015/cb15-113.html>

Generations following the Millennials, such as Generation Z, are expected to continue to be increasingly diverse as well. In news publications and media outlets, Millennials are anecdotally said to be much more likely to not have drivers' licenses, to embrace public transit, and to leverage technology for a multitude of activities.

While this may be true to a certain degree, studies have been conducted to quantify these kinds of statements in order to better anticipate future driving and transportation preferences. A study was conducted by the Massachusetts Institute of Technology on "Generational Trends in Vehicle Ownership and Use"² and explored the question of how much different Millennials actually are from other generations in regards to driving. The study found that lower rates of vehicle ownership and driving by Millennials is tied more to issues that are outside their control, such as economic conditions, rather than strictly a choice. Economic disruptions can lead to delayed career advancements which impacts personal finances and the ability to make larger purchases such as vehicles. Additionally, family planning may also be delayed until later in life resulting in more transportation flexibility for Millennials who are single and/or childless.

² MIT Study on "Generational Trends in Vehicle Ownership and Use: Are Millennials Any Different?": <http://ceepr.mit.edu/files/papers/2019-006.pdf>

Figure 2.5: County average age, 2018



Sources: U.S. Census Bureau, Woods and Poole Economics Inc.

Iowa's older generations have specific transportation needs that differ from younger generations. Figure 2.5 shows average age by county, which tends to be higher in rural areas of the state than in urban areas. As Iowans continue to travel and live independently longer, improving and expanding public transportation options is necessary to help meet the needs of older residents. Some examples of ways to enhance public transportation for all ages, particularly older residents, include:

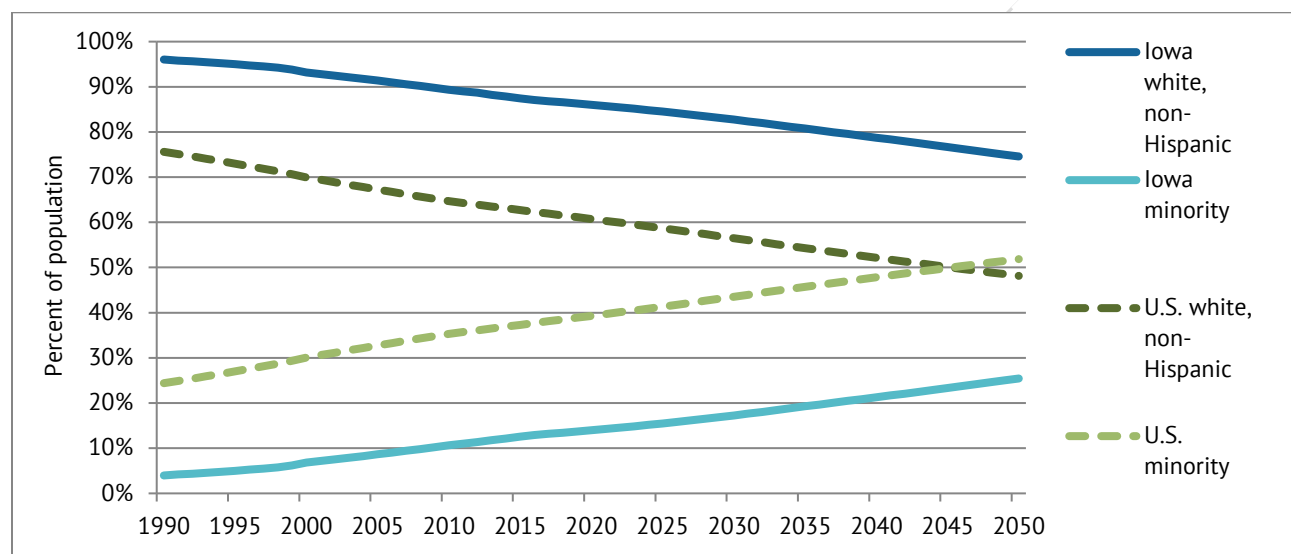
- Larger, easy to read print on signs, bus route maps, and transit information
- Vehicles equipped with wheelchair lifts
- Means of contacting ride dispatching services other than through apps or online
- Americans with Disabilities Act (ADA) accessible bus stops and well-maintained connecting sidewalks
- Improved transit options and coordination between transit providers and human service agencies

Iowa's minority population continues to grow

Iowa continues to become more diverse, with an increasing racial and ethnic minority population. Minorities³ accounted for 13.4 percent of Iowa's 2018 population, compared to less than 4 percent in 1990. By 2050, racial and ethnic minorities in Iowa are projected to account for almost 25 percent of the state's total population. However, this is far less diversity than in the nation as a whole. Figure 2.6 shows the actual and forecasted minority population in the United States and Iowa from 1990 to 2050. As shown, the minority population of the United States is projected to equal the White, non-Hispanic population by 2045.

³ For the context of this Plan, "minority" is referencing the portion of the population that is non-White and/or Hispanic. In other words, this includes all population groups except White, non-Hispanic.

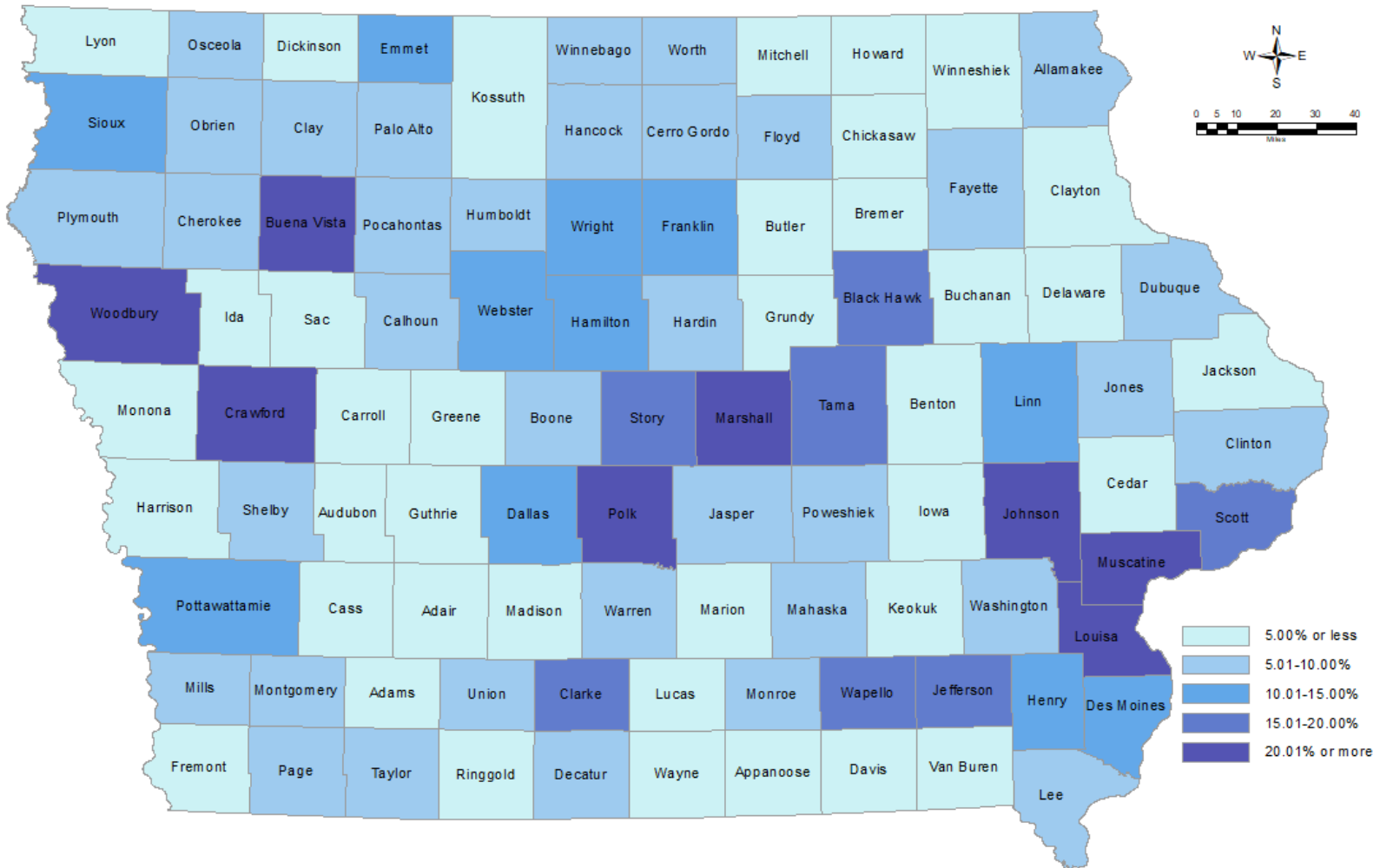
Figure 2.6: United States and Iowa White, non-Hispanic and minority population, 1990-2050



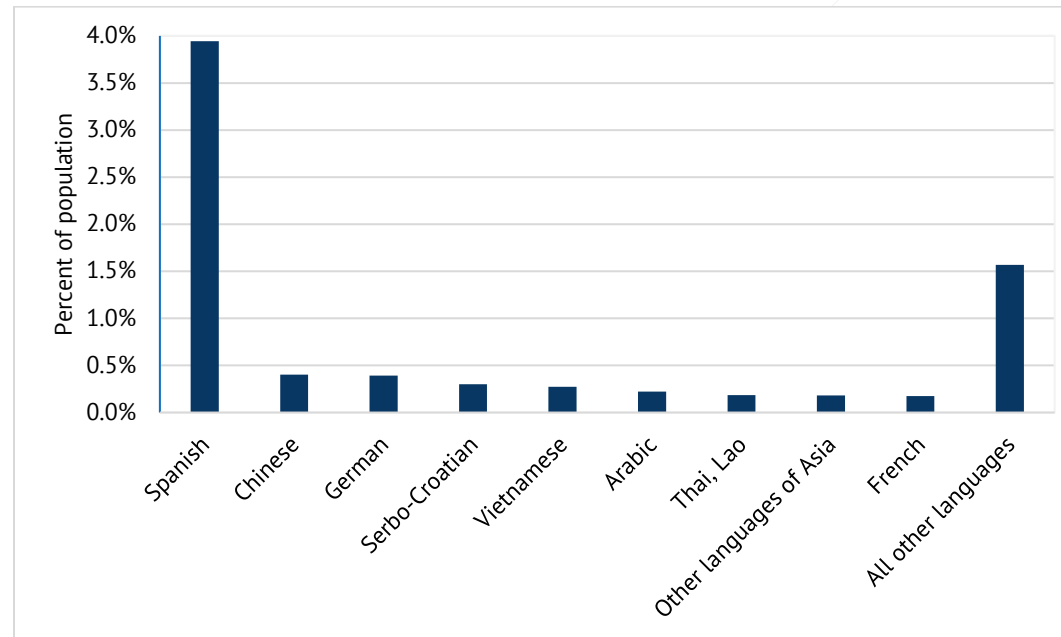
Source: Woods and Poole Economics Inc.

While most of the minority population in Iowa resides in the state's most populated counties, some of the areas with the highest percentage of minority populations are in counties outside metropolitan areas (see Figure 2.7). It is important to understand the transportation needs of Iowa's minority population. Minority groups in Iowa are more likely to have a lower median household income and take a mode other than a personal automobile to work than nonminority populations. As Iowa's minority population increases, so will the need to accommodate persons with limited English proficiency (LEP) on the state's transportation system. Currently, approximately 3.2 percent of the state's population speaks English less than 'very well'. As shown in Figure 2.8, the language most often spoken in Iowa other than English is Spanish, and this will likely continue as the Hispanic population is projected to grow faster than any other population group over the next 30 years. It is important to accommodate Iowa's LEP population in the state's multimodal transportation system in ways such as translating bus route maps and transit schedules, providing training to transit drivers on interacting with non-English speakers, and by offering interpretation services at public meetings.

Figure 2.7: Percent minority population by county, 2018



Source: Woods and Poole Economics Inc.

Figure 2.8: Percent of languages spoken, other than English, in Iowa

Source: U.S. Census Bureau

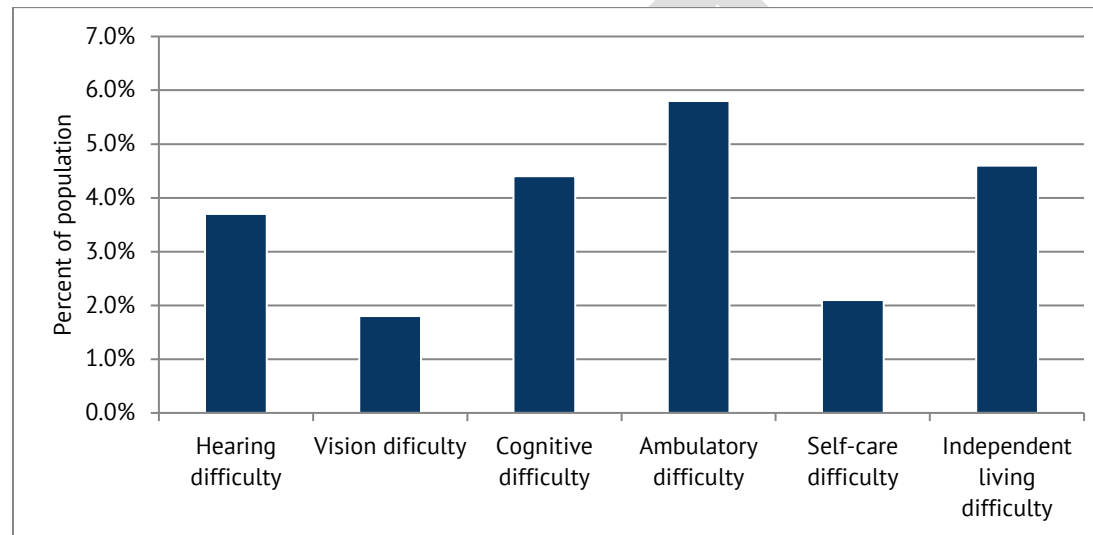
Chinese includes Mandarin and Cantonese; Thai, Lao includes other Tai-Kadai languages; French includes Cajun; All other languages includes over 30 additional languages spoken in Iowa

Iowa's transit system needs to be accessible

According to 2017 estimates by the U.S. Census Bureau's American Community Survey, roughly 11.6 percent of Iowa's population experiences some type of disability. As shown in Figure 2.9, the types of disability most experienced by Iowans are ambulatory difficulties at 5.8 percent, which impacts their mobility such as their ability to walk and climb stairs. This type of impairment could potentially affect a person as they try to access a bus stop or board a bus. It is for these reasons that Americans with Disabilities Act (ADA) accessible facilities are an important design element in planning and construction. Additionally, persons experiencing hearing

difficulties (3.7 percent), vision difficulties (1.8 percent), or cognitive difficulties (4.4 percent) could potentially have challenges accessing transit information such as maps, brochures, and route schedules.

Figure 2.9: Disabilities by type in Iowa



Source: U.S. Census Bureau

Implications for public transit – demographic trends

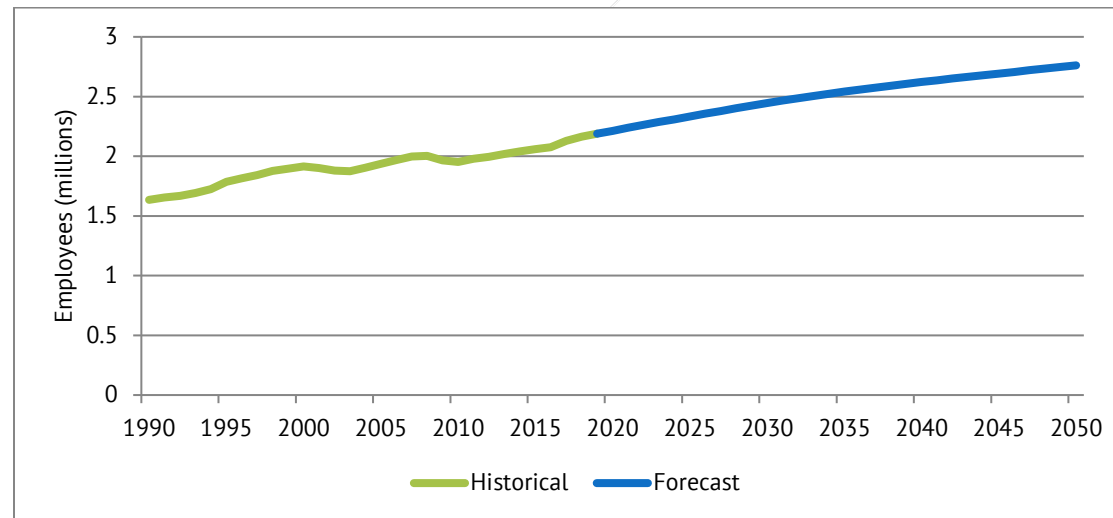
- Increased population in and around metropolitan areas and suburbs may create capacity issues and present challenges to optimizing fixed route transit services.
- Local jurisdictions with decreasing population will experience additional strain on already tight transportation budgets.
- Improvements can be made to transit facilities, bus stops, buses, transit service, and communication efforts to help meet the mobility needs of all transit riders, including riders with disabilities, older riders, and non-English speaking riders.
- It is important that all Iowans, including minority, low-income, and disabled populations, have access to employment and services in both urban and rural areas.

Economic trends

Total employment in Iowa is expected to increase slowly

In the past 30 years, total employment in Iowa has increased slowly, growing an average of one percent per year from 1990 to 2018. Iowa's employment is expected to continue to experience slow but steady growth, increasing by another 26 percent between 2018 and 2050. Figure 2.10 charts the actual and projected total employment in Iowa from 1990-2050.

Figure 2.10: Iowa employment, 1990-2050



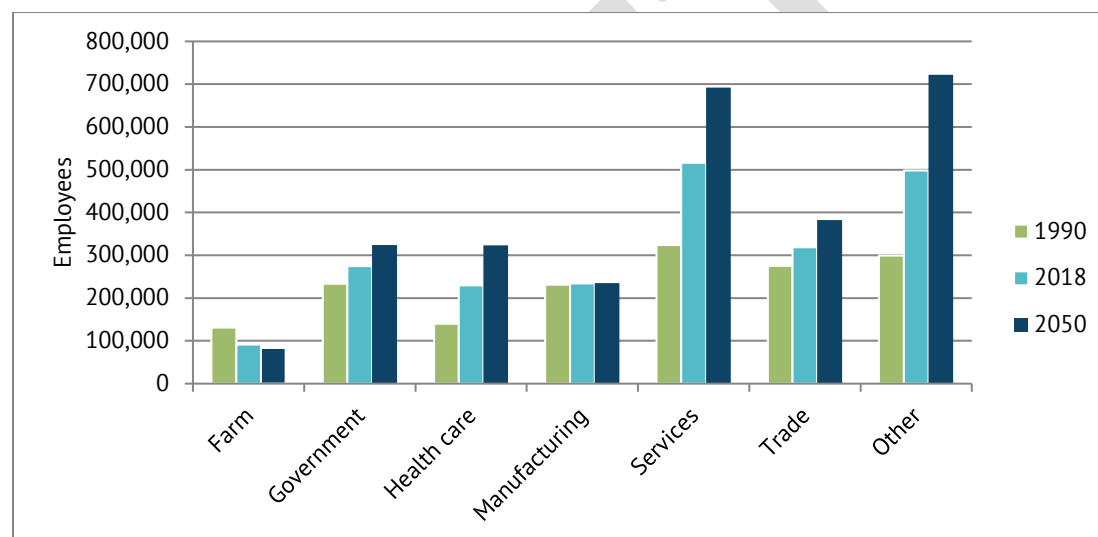
Source: Woods and Poole Economics Inc.

Iowa's employment sectors continue to change

Traditionally, farming and manufacturing have been two of the primary employment sectors in Iowa. Technological advancements and economic diversification continue to be catalysts for change in recent years. Since 1990, the farm sector has decreased by more than 40,000 jobs, which represents a decline of 30 percent in total farm employment in Iowa. This trend is projected to continue, though

flatten out, with this sector losing an additional 8,200 jobs through 2050. The number of jobs in the service sector (professional, educational, administrative, arts, etc.) is expected to grow the most over the next 30 years. Currently, there are 516,000 service jobs, which are forecast to grow to almost 692,000 jobs in 2050. The largest growth in the “other” category shown on Figure 2.11 is in the finance and insurance category, which is expected to continue to accelerate in its hiring and add more than 69,000 jobs between 2018 and 2050.

Figure 2.11: Iowa employment, 1990-2050

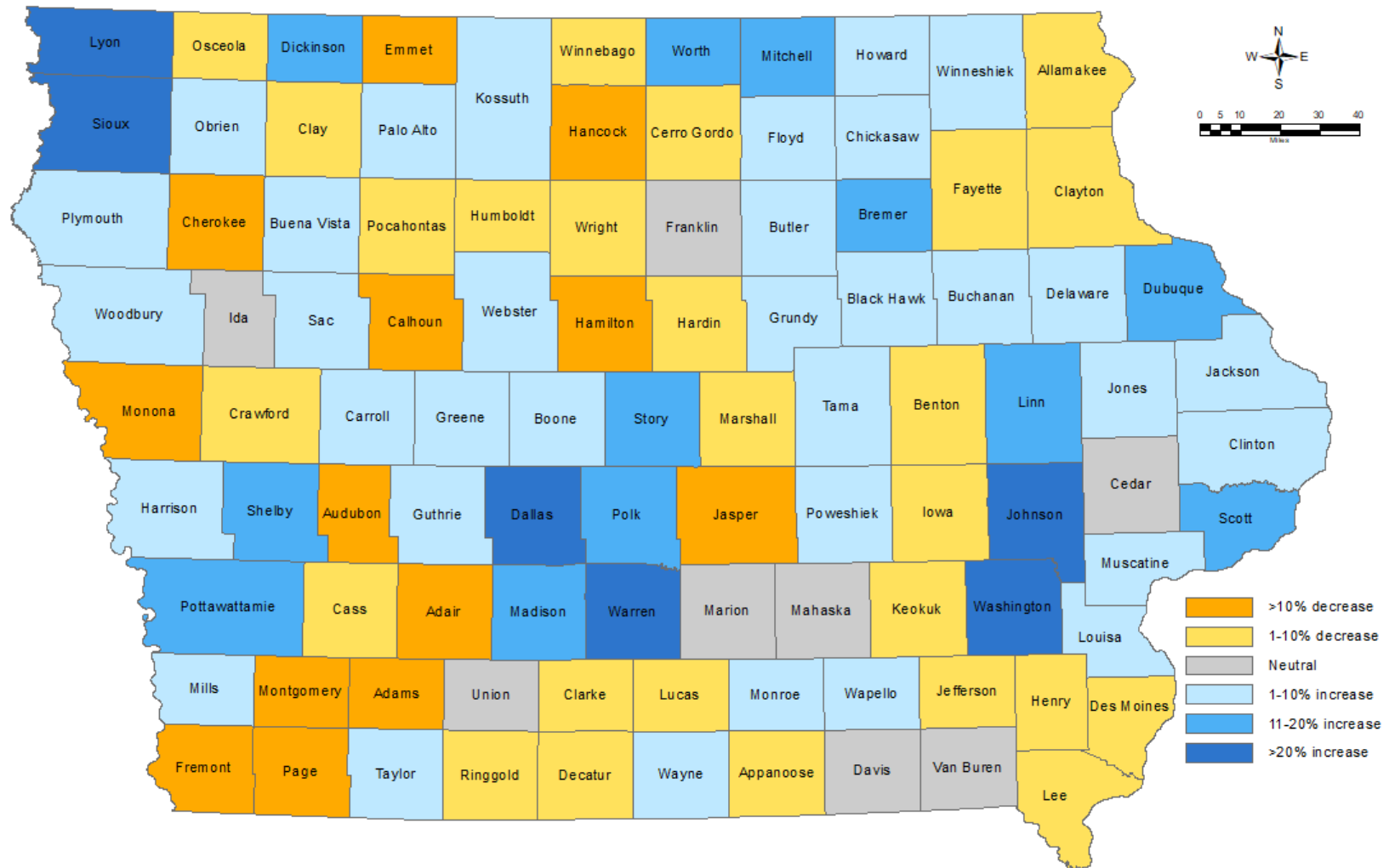


Source: Woods and Poole Economics Inc.

Iowa's employment growth is not uniform throughout the state

Areas of employment growth and decline vary around the state. Between 2000 and 2018, 52 of Iowa's 99 counties saw an increase in the number of jobs available by one percent or more, eight counties remained unchanged, and 39 counties declined by one percent or more. While there was growth in various locations across Iowa, the largest increases in employment were in the counties surrounding the Des Moines area, the Iowa City area, and north of Sioux City. Figure 2.12 illustrates the 2000 to 2018 employment change across Iowa's 99 counties.

Figure 2.12: County employment change, 2000-2018

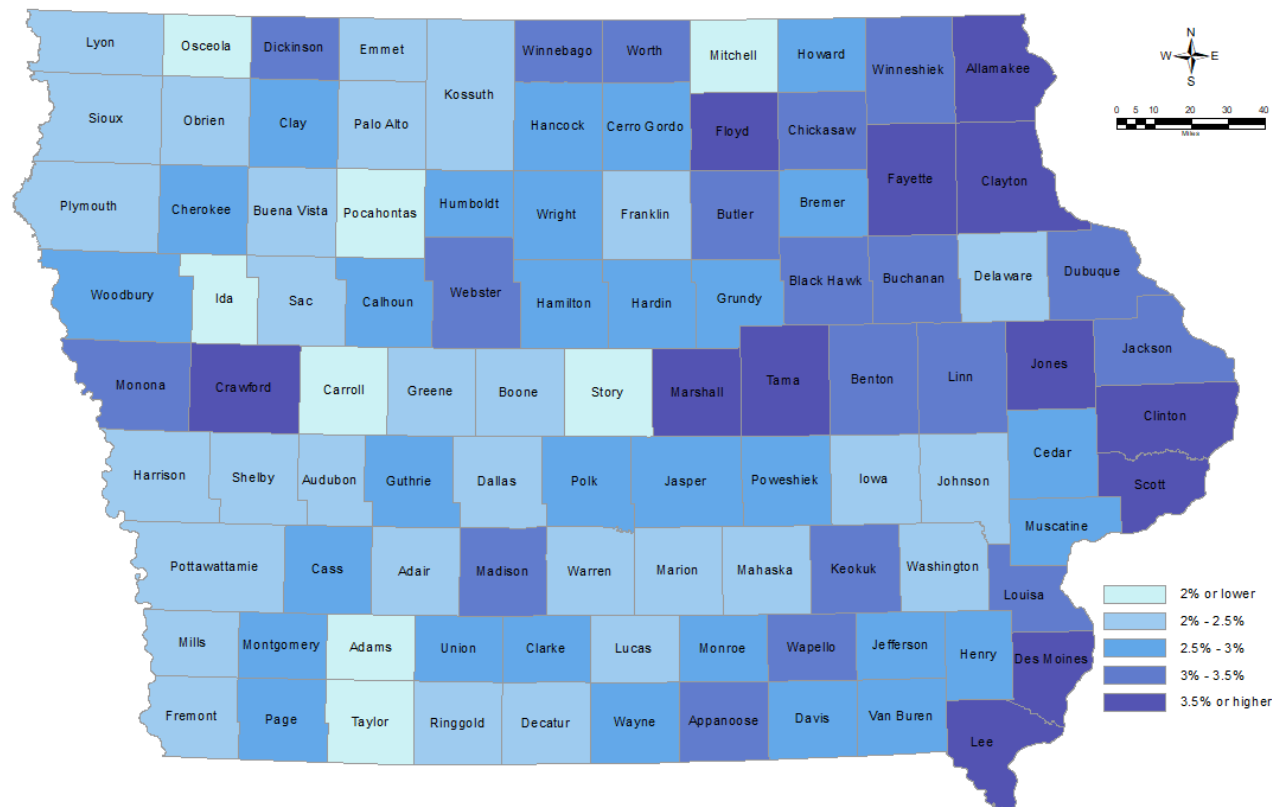


Source: Woods and Poole Economics Inc.

Iowa's unemployment rate is among the lowest in the nation

The unemployment rate is defined by the U.S. Census Bureau as a number representing unemployed people as a percentage of the civilian labor force. The civilian labor force includes all people who are employed or unemployed, as well as members of the armed forces. Iowa's unemployment rate as of December 2019 was 2.8 percent, which ranked as the 10th lowest in the nation, much lower than the U.S. average of 3.8 percent. Figure 2.13 shows the unemployment rate by county in Iowa as of December 2019.

Figure 2.13: Iowa unemployment rates by county, December 2019

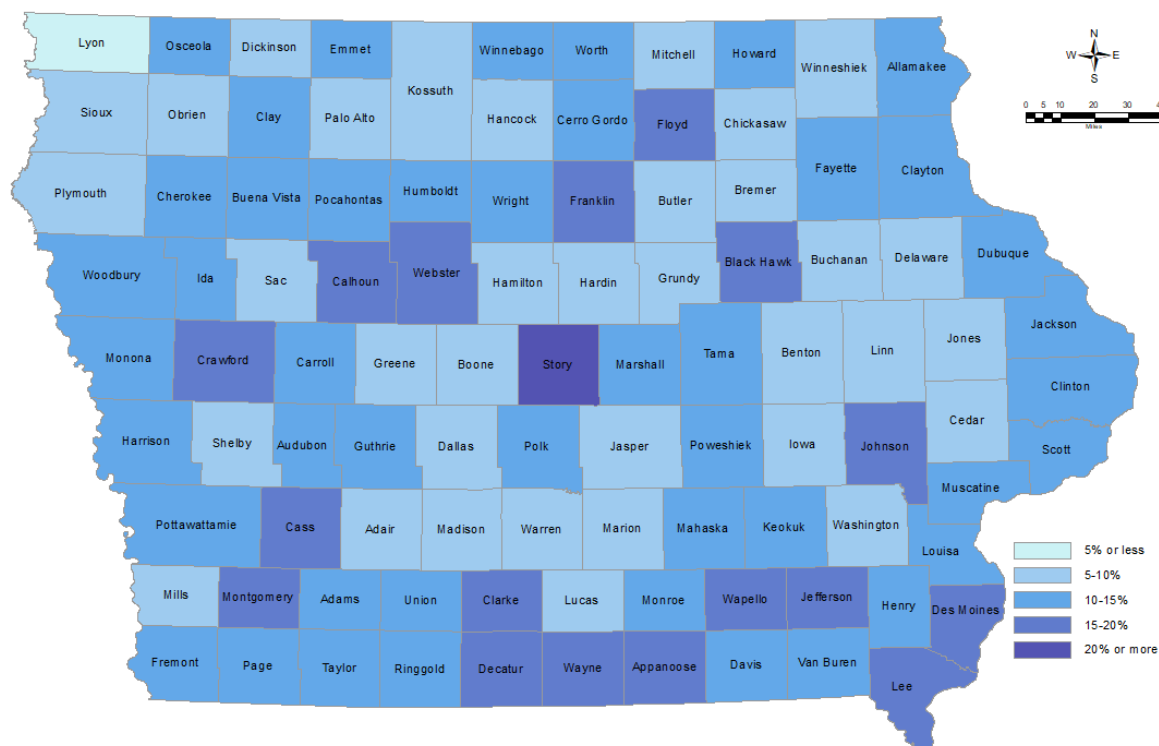


Source: Iowa Workforce Development

Iowa's living in poverty

The U.S. Census Bureau measures poverty by comparing household income to money income thresholds, varying with family size and composition. If a household's total income is below the family threshold, then that household is considered to be in poverty. For these purposes, only pre-tax income is considered and does not include noncash benefits such as public housing, Medicaid, and food stamps. Additionally, student financial aid also does not count as income. While the income thresholds used to determine poverty do not change based on geographic location, inflation and the consumer price index are factored in. According to U.S. Census 2017 estimates, nearly 12 percent of Iowans are considered to be in poverty; in other words, one out of every 8.35 Iowans is in poverty. In 65 out of 99 counties, more than 10 percent of the population is in poverty.

Figure 2.14: County population below poverty level



Source: U.S. Census Bureau

Implications for public transit – economic trends

- Employment opportunities are plentiful across urban and rural regions but are strongest in the metropolitan areas.
- With low unemployment throughout the state and uneven population growth between urban and rural areas, there will be an increased need for employers to access pools of employees that live further away.

Passenger trends

Iowans are traveling more, but passenger travel is not uniform across all modes of transportation

Since 1990, travel across all passenger modes (aviation, highway, passenger rail, and public transit) has increased 42 percent in Iowa (see Table 2.15) and approximately 37 percent across the United States. However, growth in passenger travel over the past 30 years has not been uniform across modes. In terms of relative change in Iowa, passenger vehicle-miles traveled (VMT) and aviation enplanements grew the most between 1990 and 2000, passenger rail and public transit had the most significant increases in passenger travel between 2000 and 2010, and aviation enplanements increased the most between 2010 and 2018. Overall, passenger VMT experienced the largest relative increase between 1990 and 2018, growing by 42 percent. If trends from the past 30 years continue, all passenger travel modes will increase, but at varying rates. It should be noted that passenger travel trends are influenced in part by the cost of fuel, and fluctuations in this cost can create some uncertainty in forecasting future travel trends. Figure 2.16 shows the passenger transportation trends for each mode from 1990 to 2018.

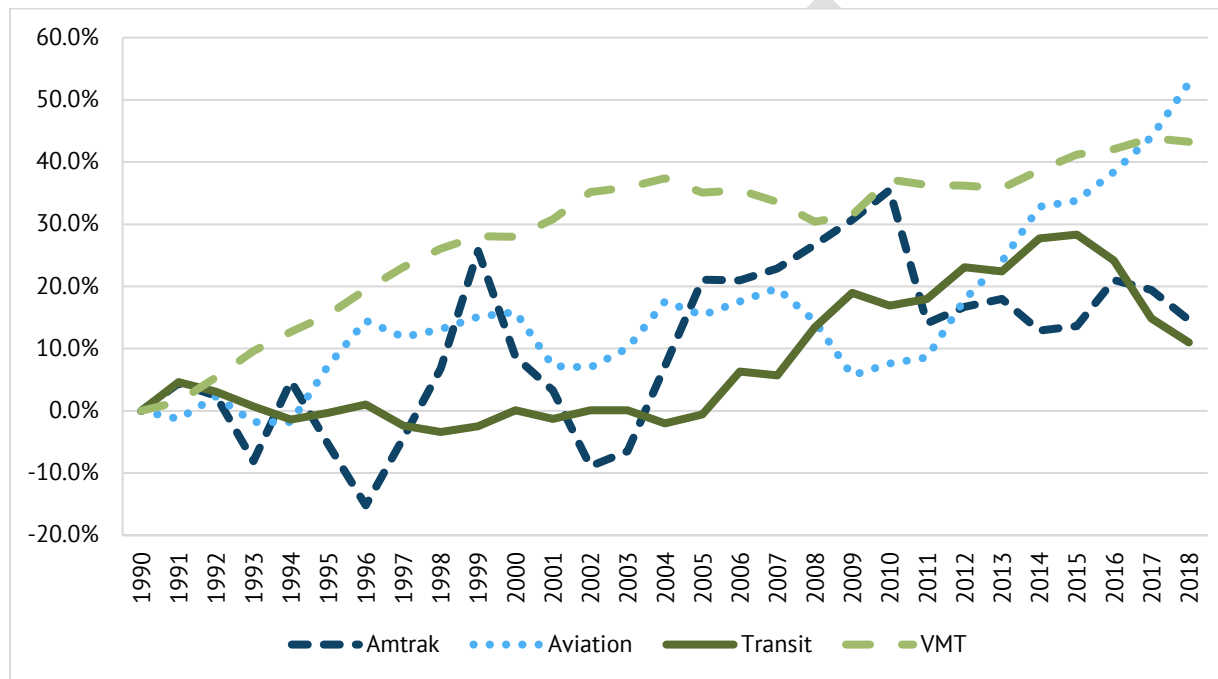
Table 2.15: Iowa passenger transportation trends, 1990-2018

	1990	2000	2010	2018
Amtrak rides	50,719	55,146	68,744	58,119
Aviation enplanements	1,363,840	1,581,217	1,468,158	2,082,586
Passenger VMT*	20,418,000,000	26,128,000,000	28,004,000,000	29,255,000,000
Public transit	22,417,065	22,449,367	26,208,453	24,887,393

**Passenger VMT includes passenger cars, light trucks, vans, sport utility vehicles (SUVs), motorcycles, and buses over all road systems*

Source: Iowa DOT

Figure 2.16: Iowa passenger travel trends by mode, 1990-2018



Source: Iowa DOT

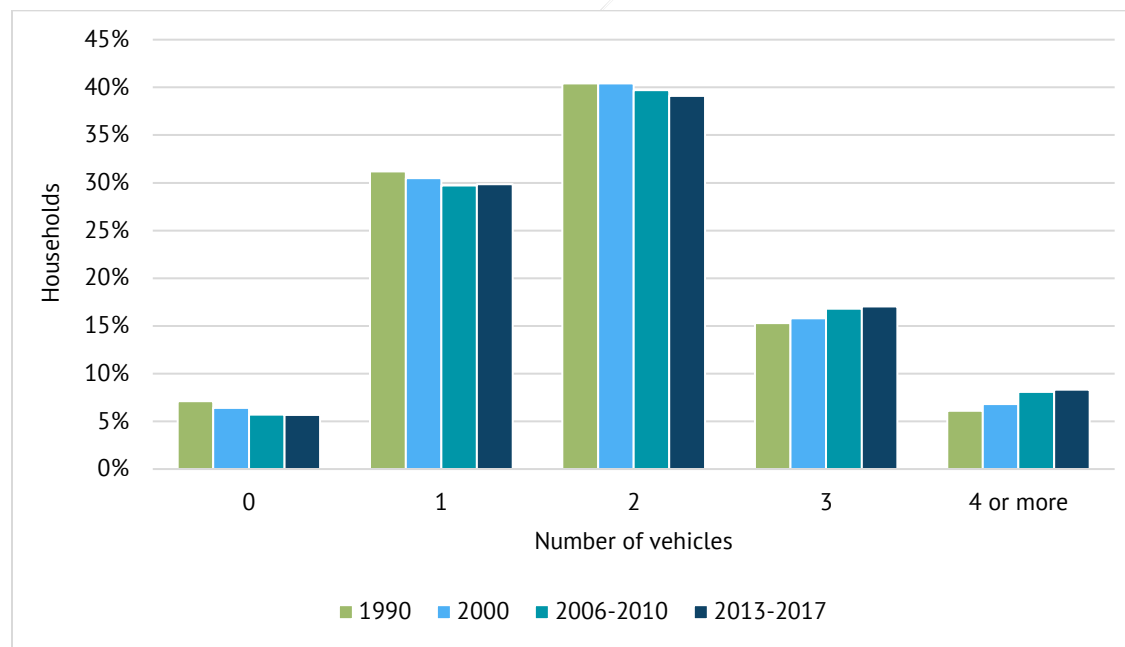
While aviation enplanements in Iowa grew 33.8 percent between 1990 and 2018, aviation enplanements throughout the United States increased by an even larger factor, 60.3 percent. Amtrak has only seen a 13.6 percent increase in ridership in Iowa from 1990 levels, while U.S. ridership has increased nearly 40 percent. A Chicago to Iowa City passenger rail route study estimated that 300,000 travelers would use the route on an annual basis. If this idea comes to fruition, passenger rail ridership could increase significantly in Iowa.

In relative terms, passenger VMT and public transit increased more in Iowa from 1990 to 2018 than the United States. Iowa passenger VMT increased 42 percent from 1990 to 2018, while US passenger VMT increased approximately 37 percent over this same period. Public transit rides increased 28.3 percent in Iowa from 1990-2018, but only 18.5 percent nationally.

The number of vehicles per household has increased

Between 2010 and 2017, there was little change in the number of vehicles per household, with most households having one or two vehicles. These two categories account for close to 70 percent of households. A longer term trend, from 1990 to 2017, shows that the percent of households with zero, one, or two vehicles have all decreased, and the percent of households with either three or four or more vehicles have both increased, suggesting the overall shift is toward an increased number of vehicles per household. Figure 2.17 illustrates the number of vehicles per household from 1990 to 2017.

Figure 2.17: Number of vehicles available per household in Iowa, 1990-2017



Sources: U.S. Census Bureau, American Community Survey Five-Year Estimates

Most lowans drive to work alone

The overwhelming majority of lowans continue to drive to work alone. From 1990 to 2000, the trend of driving alone was increasing, but since then it has remained somewhat stable at around 80 percent. Carpooling has decreased over time, dropping to 8.4 percent. Public transportation and bicycling remained stable with no notable changes between 2010 and 2017. Walking and working from home saw very little change, decreasing by 0.2 percent each, while other modes such as motorcycles and taxis (which includes paid Transportation Network Companies such as Uber and Lyft) slightly increased by 0.2 percent between 2010 and 2017. Table 2.18 shows the mode of transportation lowans used to get to work from 1990 to 2017.

Table 2.18: lowans' mode of transportation to work, 1990-2017

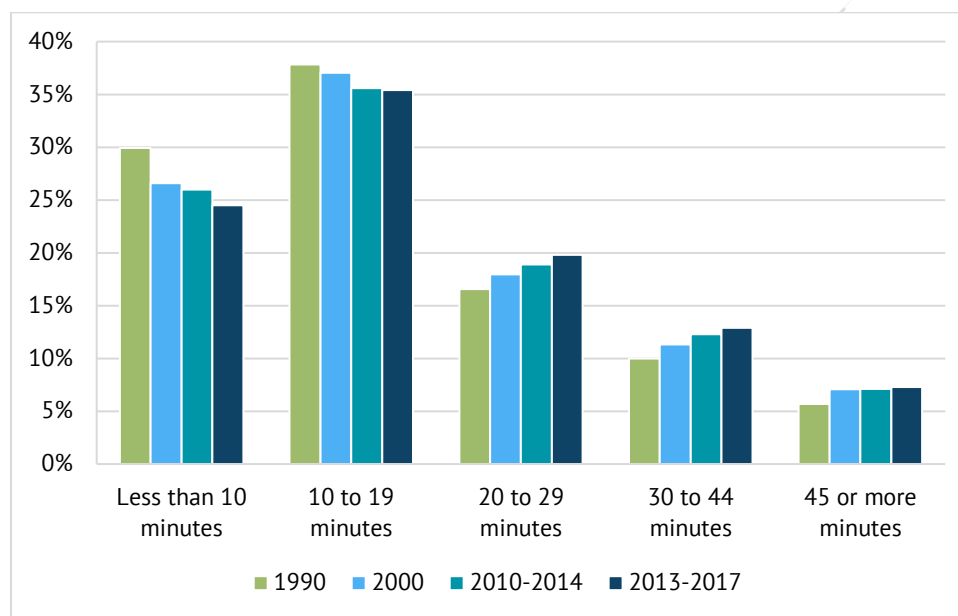
	1990	2000	2006-2010	2013-2017
Drove alone	73.4%	78.6%	78.7%	81.0%
Carpool	11.9%	10.8%	10.3%	8.4%
Public transportation	1.2%	1.0%	1.1%	1.1%
Bicycle	0.3%	0.4%	0.5%	0.5%
Walk	5.8%	4.0%	3.8%	3.4%
Other (includes motorcycle and taxi)	0.7%	0.6%	0.8%	1.0%
Worked at home	6.7%	4.7%	4.8%	4.6%

Sources: U.S. Census Bureau, American Community Survey Five-Year Estimates

Average travel time to work has increased, but lowans continue to have one of the lowest average commute times nationally

Average travel time to work for lowans has slowly increased over the past 30 years, and this trend will likely continue. Fewer people have commutes of less than 10 minutes, decreasing to 24.5 percent. Moderate distance commutes between 10 and 19 minutes remained consistent, holding steady at around 35.4 percent. Commutes of 20 minutes or longer increased over this period, suggesting that more people are living further away from where they work. Figure 2.19 shows the change in travel time to work for lowans from 1990 to 2017. Despite the slight increase in travel time, lowans continue to enjoy relatively short commute times compared to the rest of the United States. The average travel time to work for lowans was 19 minutes, much lower than the average of 26.9 minutes nationally.

Figure 2.19: Travel time to work in Iowa



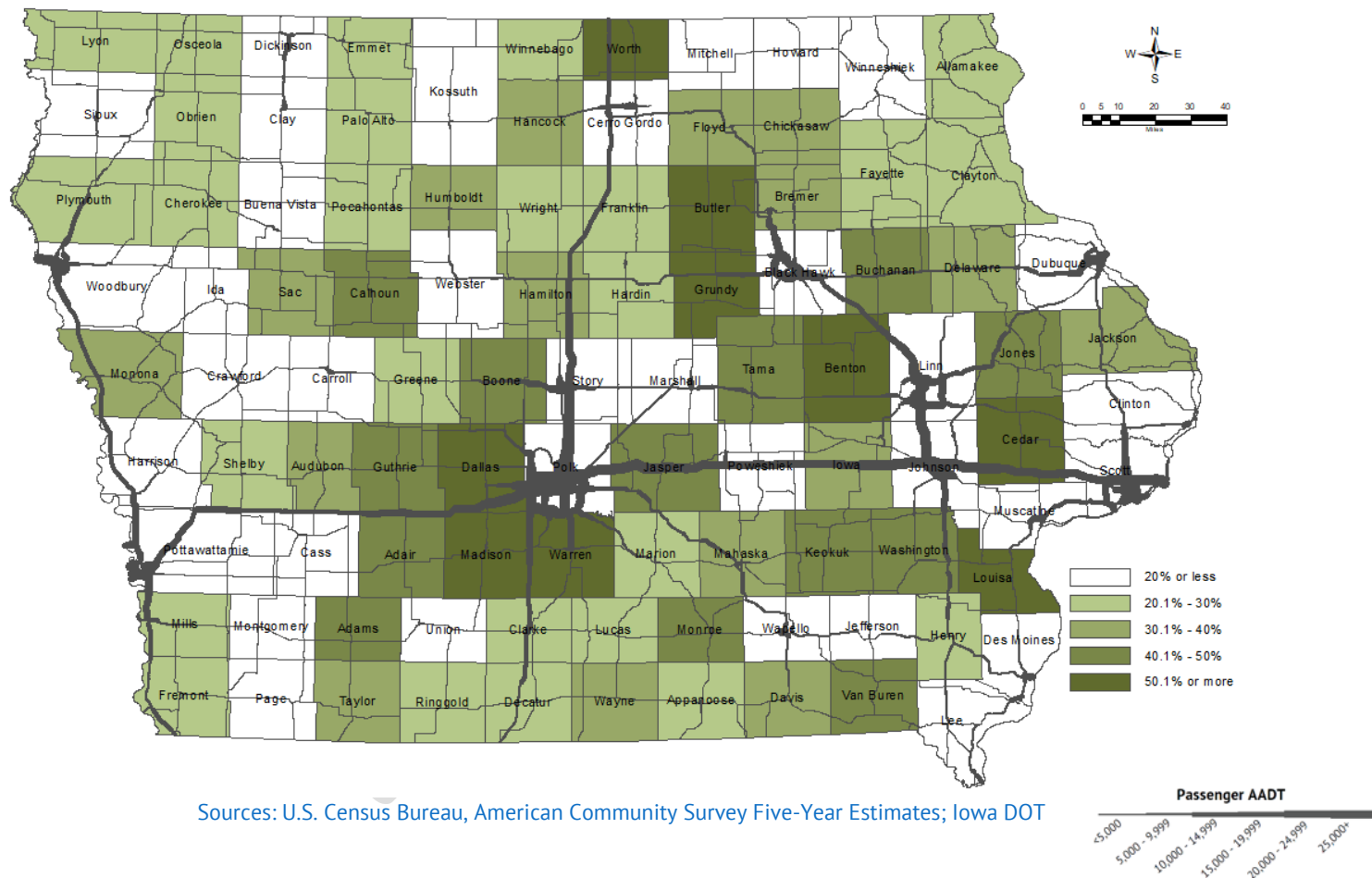
Sources: U.S. Census Bureau, American Community Survey Five-Year Estimates

More Iowans are commuting to locations outside their county of residence, which may help explain the increased travel times noted previously. In 1990, approximately 17 percent of workers commuted to a job outside their county of residence; by 2017, this increased to 19.6 percent. More than 50 percent of the residents in nine different Iowa counties traveled to jobs outside their home county in 2017, compared to only two counties in 1990. Figure 2.20 highlights the passenger vehicle annual average daily traffic (AADT) on primary highways, along with the percentage of the workforce leaving their county of residence for work. This helps illustrate routes that may experience heavy commuter traffic, and that may be candidates for increased passenger transportation options.

With jobs continuing to migrate toward Iowa's metropolitan areas, commuting has taken on more of a role to support the labor force necessary for these areas. The influence of a metropolitan area is not just on the urbanized area it encompasses, but on surrounding

counties as well. An example of this is Polk County and the surrounding region. The U.S. Census Bureau's 2017 American Community Survey estimated Polk County had approximately 245,995 workers age 16 and older, less than 10 percent of which commute to a different county for work. Two neighboring counties, Dallas and Warren, both have more than 60 percent of their workers traveling to Polk County for work.

Figure 2.20: Commuting trends of passenger AADT on primary highways, and percent of workforce leaving county of residence to work, 2017



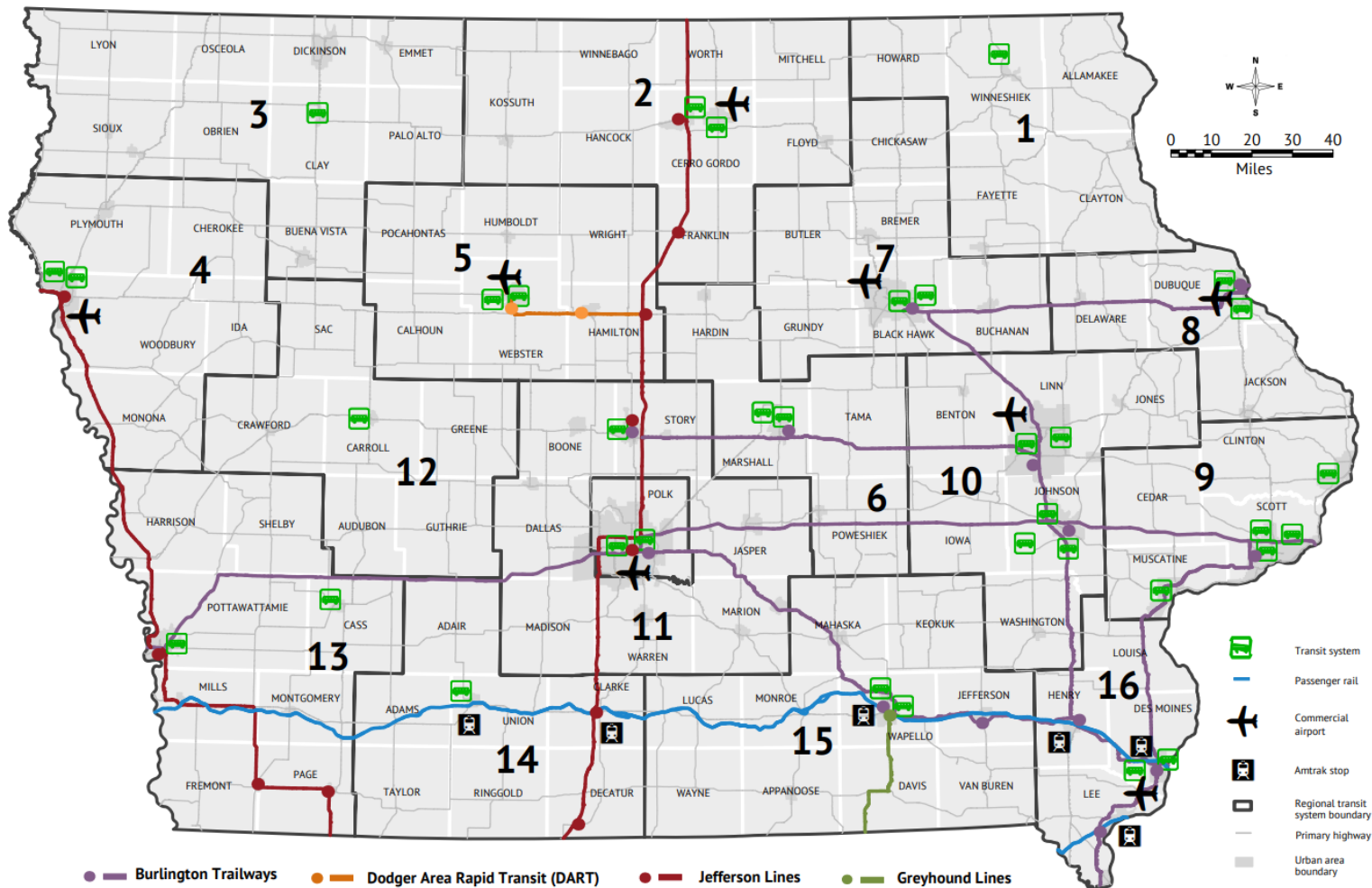
Implications for public transit – passenger trends

- Travel across all passenger modes has increased nearly 22 percent since 1990, while Iowa's population has only grown by 14 percent. Investments in all passenger modes are necessary to ensure mobility options for Iowans.
- Driving to work alone continues to be by far the most common mode choice for commuters, and its percentage share has continued to increase. Meanwhile, other modes of transportation usage have stayed the same or slightly decreased, including biking, walking, and carpooling. Working from home continues to be a choice utilized by a number of Iowans; however, its trend has been slightly decreasing since 1990.
- Iowans are increasingly choosing to live over 20 minutes away from their place of work, creating more opportunities for regional transit services while creating challenges for extending local fixed route transit service into suburban areas.

2.2. System and Travel Characteristics

Passenger transportation comes in many forms and many times it takes the shape of multiple modes of transportation combined together in order for a passenger to get from their origin to their destination. Figure 2.21 highlights some of these modes, including public transit, passenger rail, commercial air service, and intercity bus routes. The following sections describes some of the primary passenger transportation options that currently exist within Iowa. Understanding the unique characteristics of these transportation systems helps us better plan for incorporating their use within the context of creating and maintaining a robust, efficient, and effective multimodal passenger transportation system in Iowa.

Figure 2.21: Iowa passenger transportation services



Source: Iowa DOT

Public Transit

Iowa's public transit system provides many benefits to its residents, fulfilling a key alternative transportation role. In general, transit users in Iowa include commuters, elderly residents, low-income residents, college students, disabled residents, and youth. However, especially in metropolitan areas, people are increasingly making the choice to ride public transit for economic, practical, or environmental reasons.

Public transit services positively impact Iowa's economy. Transit ridership reduces fuel consumption and demand, as well as costs such as automobile insurance and maintenance for passenger, business, and commuter trips. Additionally, public transit services provide transit-dependent workers with reliable and essential access to employment opportunities. Availability of public transit service in all 99 Iowa counties also enables elderly residents who are no longer able to drive but in good health otherwise to remain in their own homes longer. This increases their quality of life and reduces assisted living or nursing home costs. From 1985 through 2018, transit ridership in Iowa has grown modestly from 23.8 million annual rides to 24.9 million annual rides. Ridership is expected to continue increasing in the future as Iowa's population base ages and as more people embrace environmentally friendly transportation options.

There are 35 public transit systems in Iowa, which are classified by size. Urban areas with populations 50,000 and greater are designated as Large Urban systems, urban areas with less than 50,000 population are designated as Small Urban systems, and rural areas outside the urban systems are designated as Regional systems. Figure 2.22 shows the location of Iowa's public transit agencies.

Large Urban

- Ames Transit Agency/CyRide
- City of Bettendorf
- University of Iowa, Campus
- Cedar Rapids Transit
- Coralville Transit System
- City of Council Bluffs
- Davenport Public Transit (CitiBus)
- Des Moines Area Regional Transit Authority (DART)
- City of Dubuque, The Jule
- Iowa City Transit
- Sioux City Transit System
- Metropolitan Transit Authority of Black Hawk County/Waterloo MET

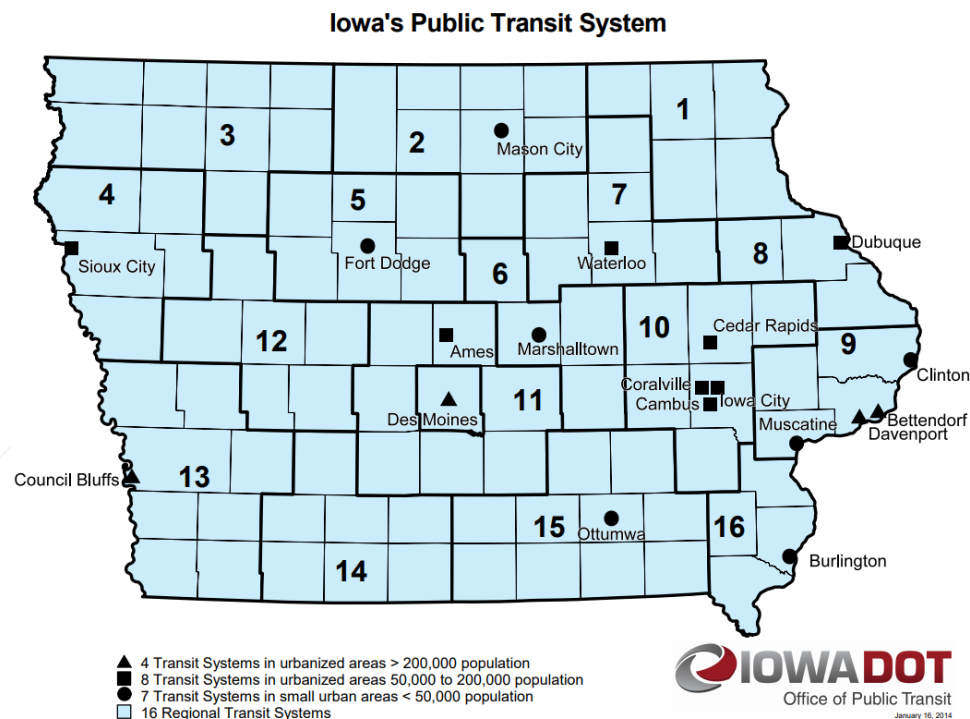
Small Urban

- Burlington Urban Service
- City of Clinton, Municipal Transit Administration
- City of Fort Dodge (DART)
- Marshalltown Municipal Transit
- City of Mason City
- City of Muscatine
- Ottumwa Transit

Regional

- Region 1: Northeast Iowa Community Action Corporation – Transit/NEICAC-T
- Region 2: Region 2 Transit
- Region 3: Regional Transit Authority/RIDES
- Region 4: Siouxland Regional Transit System
- Region 5: MIDAS Council of Governments
- Region 6: Region Six Resource Partners/PeopleRides
- Region 7: Iowa Northland /Regional Transit Commission
- Region 8: Region 8 Regional Transit Authority
- Region 9: River Bend Transit
- Region 10: CorridorRides
- Region 11: Heart of Iowa Regional Transit Agency
- Region 12: Western Iowa Transit System
- Region 13: Southwest Iowa Transit Agency
- Region 14: Southern Iowa Trolley
- Region 15: 10-15 Regional Transit Agency
- Region 16: South East Bus (SEIBUS)

Figure 2.22: Iowa's public transit agencies



Source: Iowa DOT

In recent years, operation and maintenance costs for transit services in Iowa have been increasing much faster than revenues. Consequently, it has been difficult to pay for necessary improvements (e.g., facility upgrades, bus replacements, and fleet expansions).

The percent of Iowa's public transit vehicles exceeding the age threshold for replacement has been steadily increasing over the past several years. This is primarily due to less federal funding for bus replacement in recent reauthorization bills, along with a large portion of the fleet replaced with American Recovery and Reinvestment Act funding in 2009 reaching the age threshold at the same time. While recent federal grants from the Bus and Bus Facilities Program in 2016-2019 have helped prevent that percentage from increasing further, the overall age of the fleet is still a serious issue for public transit service in Iowa. According to the Federal Transit Administration's National Transit Database for the most recent available reporting year of 2018, Iowa has a bus fleet with an average age of 7.42 years, which is the twelfth oldest among states and territories.

Other Passenger Travel Options

Intercity Bus

Intercity bus service is an extremely valuable transportation resource for Iowa's residents who do not drive or choose not to drive. This service allows them to reach destinations across the country. Routes and stops for Iowa's four intercity bus carriers are shown on Figure 2.21. Intercity bus services include stops at non-urbanized locations and make meaningful connections to nationwide networks. As of 2016, 15 percent of state's federal non-urbanized (5311) transit funding must be used for support of intercity bus services, unless the Governor certifies this need has been met).

Eligible participants for the Intercity Bus Program include private intercity bus companies, companies wishing to start intercity bus service, public transit agencies either operating or proposing to operate intercity bus services, or local communities wishing to support intercity bus connections to their community.

Iowa's Intercity Bus Program has four components in priority order:

1. Base level support of existing services
2. Start-up support for new services
3. Support for marketing of intercity bus services and interlined service
4. Support for intercity bus capital improvements (over the road coaches, vertical infrastructure, vehicle renovations/improvements, ADA improvements to vehicles and facilities)

Passenger Rail

Like freight rail transportation, Iowa has two passenger rail routes through Amtrak that serve long-distance destinations between Chicago and two California destinations, the San Francisco Bay Area and Los Angeles, and stop at six various stations throughout the state. There currently is no intercity corridor service or commuter rail service provided in the state, either by Amtrak or by other operators. There are two tourist or heritage railroads offering excursion trips in the state. As metropolitan areas throughout Iowa continue to grow, the need to invest in a diverse network of passenger transportation options that will accommodate this growth will continue to be a factor.

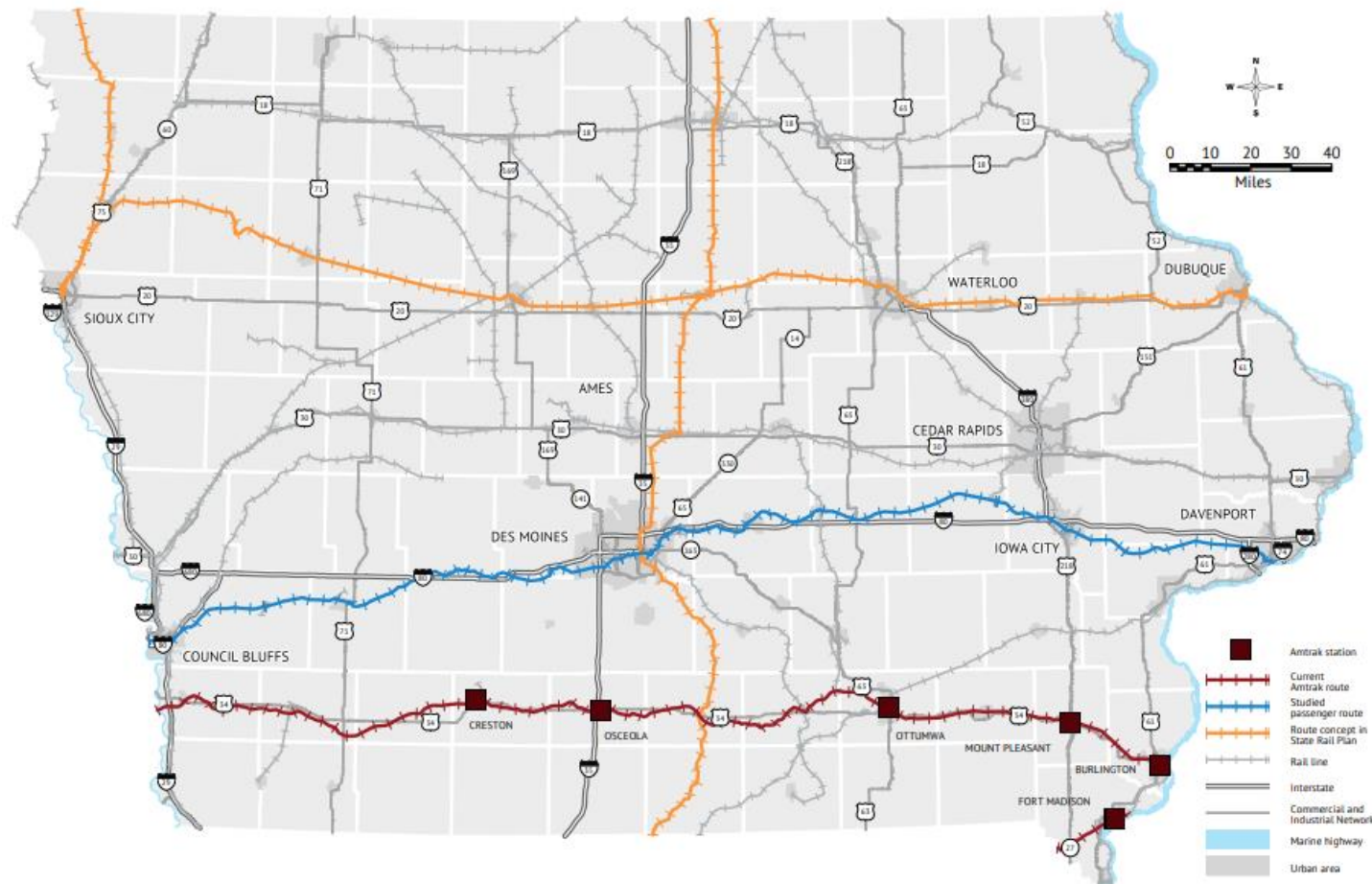
Passenger rail service in Iowa is currently provided by two Amtrak routes, the California Zephyr from Chicago, Illinois to Oakland, California, and the Southwest Chief from Chicago to Los Angeles, California. The California Zephyr operates over the BNSF tracks in southern Iowa providing daily service in both directions. Stations in Iowa include Burlington, Mount Pleasant, Ottumwa, Osceola, and Creston. The Southwest Chief also operates daily in both directions over the BNSF tracks in extreme southeast Iowa with one stop in Fort Madison. Figure 2.23 shows current service and routes where service is being planned or considered for study.

Nationwide, passenger rail ridership on Amtrak has increased from 20.8 million in 1985 to 31.7 million in 2018. This increase has not been reflected in boardings or alightings at Iowa Amtrak stations, which are at relatively the same level that they were in 1985. Just over 58,000 passengers boarded and alighted at the six Iowa Amtrak stations in 2018. Of these, approximately 16,000 boardings and alightings were at the Osceola Station (located south of Des Moines) and approximately 12,500 boardings and alightings were at the Mount Pleasant Station (located south of Iowa City). Projections indicate boarding and alightings at existing Amtrak stations in Iowa will rise to approximately 62,000 in 2040, an increase of just above 8 percent over the 26-year period.

While these two lines are a tremendous asset for the state, there is concern that most of Iowa's largest communities do not have convenient passenger rail connections to major regional cities such as Chicago, Omaha, Minneapolis, or Kansas City. The Iowa DOT's 10-Year Strategic Passenger Rail Plan envisions a network that provides service connecting Iowans to major cities, regional destinations, and many other communities not currently served by commercial air service or passenger rail. At this point, there are no plans for changes in the frequency or routes of Amtrak services in Iowa. That noted, Iowa DOT is working on various fronts on potential new passenger rail

corridor services and facilities supported at least in part by federal funding sources. These plans are discussed in Chapter 3 of the Iowa State Rail Plan ⁴– Proposed Passenger Rail Improvements.

Figure 2.23: Passenger rail routes in Iowa



Source: Iowa DOT

⁴ Iowa State Rail Plan: https://iowadot.gov/iowainmotion/railplan/2017/iowaSRP2017_Complete.pdf

Aviation

Iowa's air transportation system plays a critical role in the economic development of the state and the quality of life for Iowans, providing an essential travel option for business and leisure. Airports are key transportation centers and economic catalysts, moving people and goods quickly and efficiently. The Federal Aviation Administration (FAA) lists more than 3,700 aircraft and 5,500 pilots in the state. With more than 1 million annual aircraft operations conducted at 107 publicly owned airports (see Figure 2.24), the aviation system provides a valuable transportation mode to meet the needs of businesses, residents, and visitors.

Figure 2.24: Iowa airports by role and bordering commercial airports

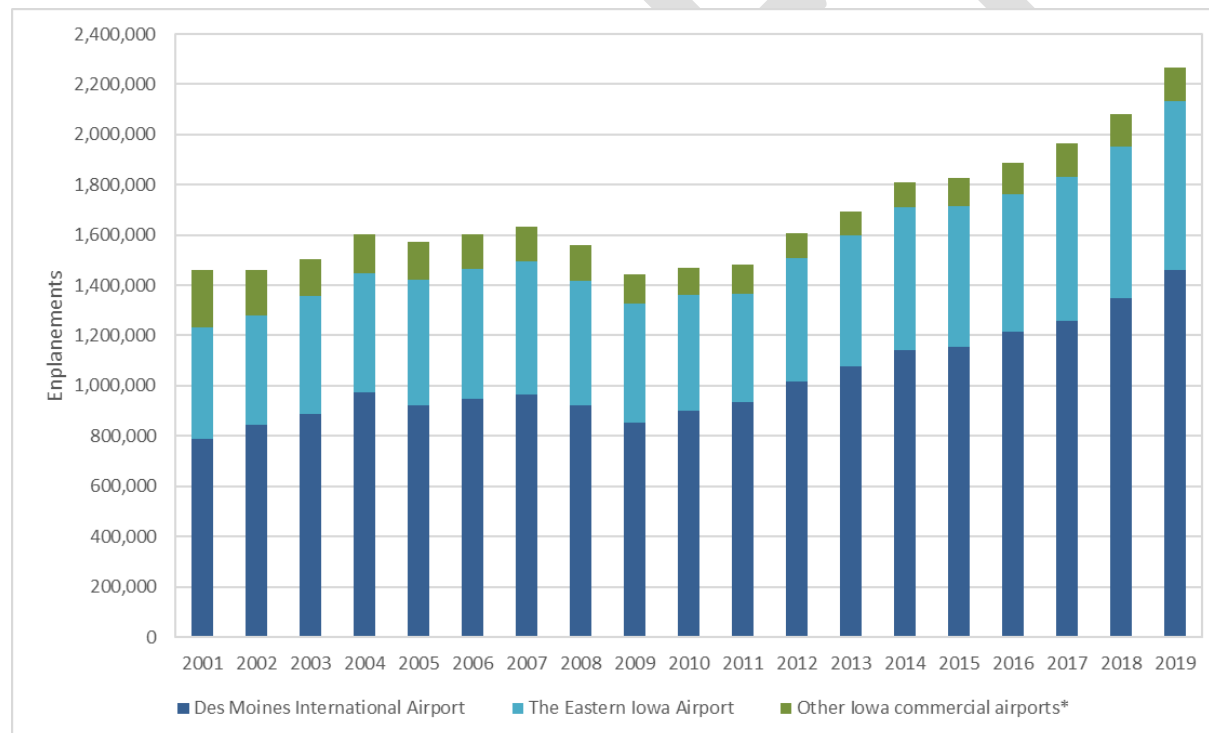


Source: Iowa DOT

Iowa's commercial service and general aviation airports provide access for many different types of aviation system users. More than 1.8 million people are boarded (enplanements) on commercial aircraft and nearly 98,000 tons of cargo are shipped from Iowa's eight commercial service airports each year. General aviation accounts for most aircraft operations in Iowa and includes uses for agriculture, business, charter, flight instruction, law enforcement, medical transport, and recreational activities.

After a slight decline during 2008-2011, enplanements at Iowa's commercial service airports have been growing (see Figure 2.25). Forecasts suggest passenger traffic will experience annual increases of 2 percent over the next 20 years. During the same period, general aviation activity is expected to see modest increases in both based aircraft and operations.

Figure 2.25: Enplanements at Iowa's commercial service airports, 2001-2019



*This includes Dubuque Regional, Fort Dodge Regional, Mason City Municipal, Sioux Gateway, Southeast Iowa Regional, and Waterloo Regional Airports

Source: FAA

Transportation Network Companies (TNC)

One area of yet unknown influence on public transit ridership is the use of paid rideshare applications such as Uber and Lyft, otherwise known as Transportation Network Companies (TNCs). These services involve people, who may have otherwise taken public transit or used another mode of transportation, paying to ride in private passenger vehicles. These services are considered “paid rideshares” or for-hire passenger transportation provided by rideshare companies. Iowa defines a rideshare company as a corporation, partnership, sole proprietorship, or other entity that operates in this state and uses a digital network (an on-line enabled app, internet site, or system offered by a rideshare company) to connect riders to drivers who use their personal vehicles to provide prearranged rides for a fare. More information on what these services consist of can be found on Iowa DOT’s website⁵.

The ride hailing service Lyft began offering service to all of Iowa starting in August 2017. Lyft originally began service in Ames, Cedar Rapids, Davenport, Des Moines, Dubuque, Iowa City, Sioux City and Waterloo earlier in 2017 before expanding service to the rest of the state. Lyft notes that availability of drivers will impact service in rural areas.

In January 2019, Uber announced that its paid rideshare service was available across the entire state of Iowa. While exact average wait times are not available, it is expected that with fewer or potentially no drivers available in some areas, service levels will differ considerably, particularly between urban and rural regions.

Automated Vehicles (AV)

Another area of unknown influence on public transit service and ridership is the advancement of automated vehicles (AV). Vehicles that are fully autonomous could potentially operate without the need for a driver, which could revolutionize passenger travel. Many organizations have attempted to project AV adoption rates into the future in order to anticipate how many autonomous vehicles could be on the road in the near and long-term future. Due to the multitude of unknowns and variable factors, forecasted AV adoption rates has decreased and most expect a negligible portion of the overall fleet of vehicles to have AV technology in the near future.

⁵ <https://iowadot.gov/mvd/Paid-Rideshare#474891722-information-for-rideshare-companies>

For the purposes of this Plan, the potential benefits of AV to mobility is of special importance as it may potentially have the most direct impact on passenger transportation services. From a technical standpoint, the FTA⁶ has already begun studying the possibility of incorporating autonomous vehicles into transit fleets by evaluating the capability of existing technology and the ability to retrofit new automated technology into buses. While some existing technology will work well with future AV uses, it was found that the configuration of most braking systems will not be sufficient or at least very difficult for automated technology to leverage unless costly upgrades are made. It was noted however, that hybrid and electric buses have a different type of braking system that perform better as an AV.

From an operations standpoint, the [American Public Transportation Association \(APTA\)](#)⁷ is investigating types of transit service that would most likely be the earliest adopters of autonomous technology. Among those services, low-speed shuttle AV's are assessed as having potential to replace existing large buses that service low demand routes with infrequent schedules. First mile/last mile service also possible services that might see smaller AV transit vehicles providing rides. According to U.S. DOT research conducted in 2018, of the dozen AV shuttle pilot test projects, all of them utilized electric vehicles with capacities between 10 and 15 transit riders, although most of the testing has been limited to closed courses and routes due to safety concerns.

As far as the overall impact of AV on public transit ridership, a study⁸ by researchers from North Carolina Department of Transportation and the University of Tennessee found that AV's will likely result in a net decrease in public transit ridership. While they acknowledged that much more research still needs to be done on this, they concluded that this ridership decrease will be due to factors such as extra comfort and privacy of AVs compared to public transit and the relative utility of AVs. It was also noted that micro-mobility services such as shared AVs and microtransit AVs could attract riders from transitional public transit services. Additionally, once full automation has been achieved, populations who otherwise could not drive, such as the disabled, elderly, and unlicensed individuals, could potentially transition from public transit to AV usage.

⁶ FTA Research – Transit Bus Automation Project: Transferability of Automation Technologies:

<https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118161/transit-bus-automation-project-transferability-automation-technologies-final-report-fta-report-no.pdf>

⁷ APTA Policy Brief – Public Transit Increases Exposure to Automated Vehicle Technology: https://www.apta.com/wp-content/uploads/Policy-Brief_AVFinal.pdf

⁸ Exploring the effect of autonomous vehicles on transit ridership:

https://www.researchgate.net/publication/328979918_Exploring_the_effect_of_autonomous_vehicles_on_transit_ridership

Shared Systems (Bike, Scooter, etc.)

Most shared or electric bicycle (eBike) and scooter services, whether docked at a rack or undocked, are managed at the local jurisdictional level. As such, each location will individually determine if such mobility options are warranted, have sufficient demand from the public, and meet statutory requirements designated for the local area.

Currently there are three Iowa communities that either have electric scooters or are in the process of considering them. In September of 2019, after amending city code earlier in April, Cedar Rapids formed an agreement with VeoRide to operate and maintain both bike and scooter sharing in the city consisting of 30 scooters and 150 bikes. The electric scooters have a 28-mile range and can reach 12 miles per hour. Likewise, Iowa City also changed its city code to handle electric scooters and bikes the same as non-electric/motorized versions, contracting with Gotcha Mobility to implement dockless bike sharing facilities in the city.

In addition to Cedar Rapids and Iowa City, Des Moines is also exploring allowing electric scooters within its jurisdiction. Des Moines already has an extensive bike share fleet, so the scooters would be an augmentation of that service. If communities continue to incorporate these types of shared systems, they could have varying effects on public transit, from serving as an alternative mode for transit riders to helping to provide last-mile connections to transit riders.

Other shared transportation options

Other technological transportation innovations that could affect public transit include transportation subscription services, where an individual pays for access to multiple modes of transportation to serve their needs at any time (e.g., rental cars, bike, vanpool, passenger rail pass, etc.), or paying a monthly fee for the access rather than owning a personal vehicle or waiting to ride the bus.

Free alternative transportation options include arranging for carpools or vanpools using the [Iowa Rideshare](https://www.iowarideshare.org/Public/Home.aspx)⁹ ridematching system that helps to quickly and securely find viable commute options, including carpool partners, vanpool routes, transit routes, cycling buddies, and more. Since its inception in late 2016, more than 5,000 unique users have registered with Iowa Rideshare, resulting in over 2,500 connections between multiple commuters and carpools. Additionally, DART offers its own vanpool program with connections available through the Iowa Rideshare site. To date, DART's fleet of nearly 250 vans have performed over 3,000 additional commuter trips. The [Iowa Statewide Park and Ride System](https://iowadot.gov/iowainmotion/files/StatewideParkandRideSystemPlanFINAL.pdf)¹⁰ further supports

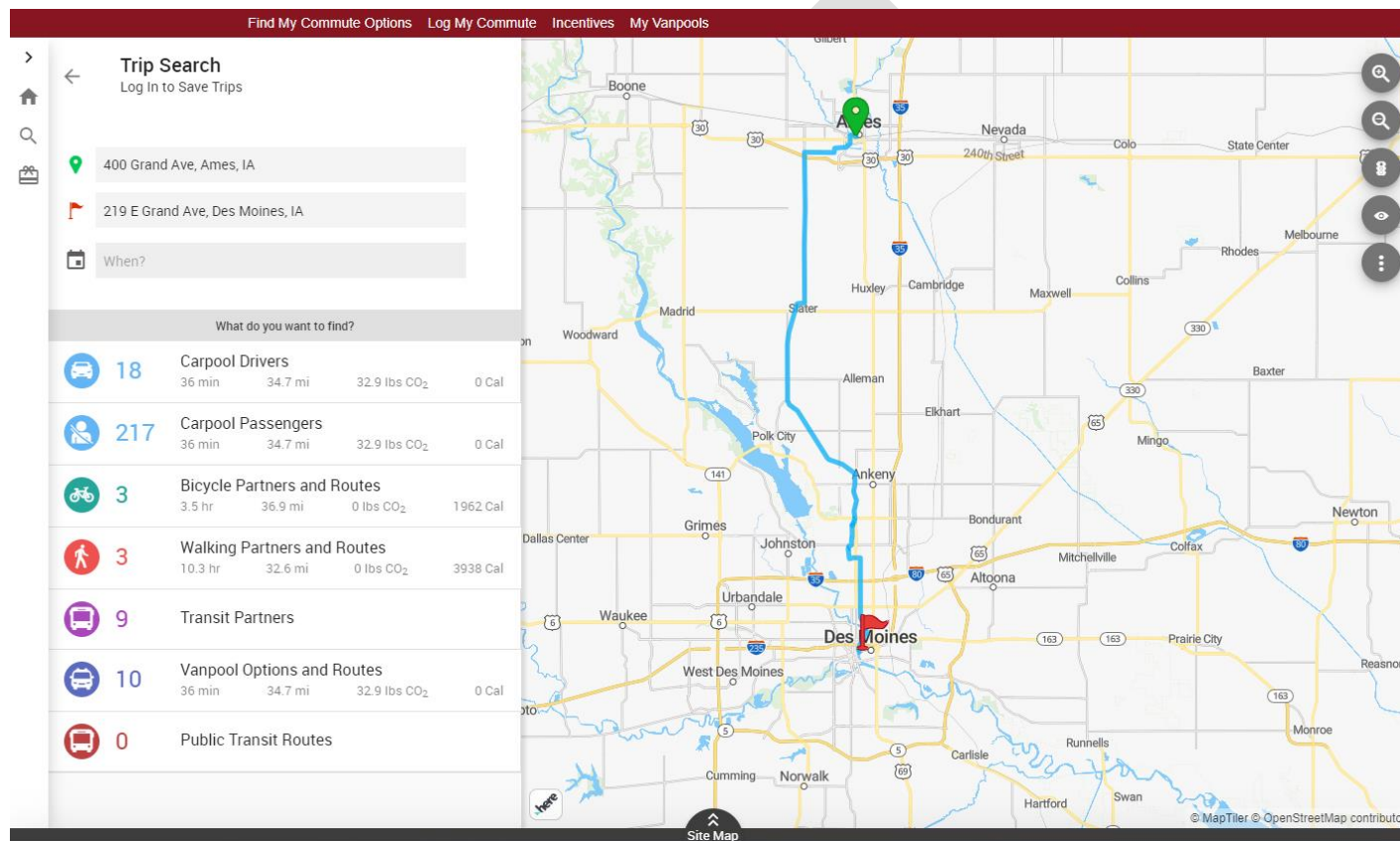


⁹ Iowa Rideshare website: <https://www.iowarideshare.org/Public/Home.aspx>

¹⁰ Iowa Park and Ride System Plan: <https://iowadot.gov/iowainmotion/files/StatewideParkandRideSystemPlanFINAL.pdf>

carpooling and ridesharing by providing free parking for commuters throughout the state, which can be utilized by commuters connecting through Iowa Rideshare or any carpooling commuter in the state, free of charge.

Figure 2.26: Iowa Rideshare website, Iowa's statewide ridematching system



Source: Iowa DOT